

CLAIMS

1. A method for gluing microcomponents (18) to a substrate (1) in the production of microsystem components, 5 comprising the following steps:

- applying a reactive or nonreactive hotmelt adhesive (5) to the microcomponent (18) and/or the substrate (1);
- 10 - heating the hotmelt adhesive (5), and
- applying the at least one microcomponent (18) to the substrate (1), the hotmelt adhesive (5) being on the contact areas between microcomponent (18) and substrate (1), **characterized by**
- 15 - areal application of pulverulent hotmelt adhesive (5) to the surface of the substrate (1) or microcomponent (18),
- 20 - incipient melting of selected bondsites (7) by local heating by means of irradiation of the selected bondsites through a focusable heat source (11) of the powder layer;
- 25 - removal of the powder layer not incipiently melted; and
- 30 - adhesion of the at least one microcomponent (18) to the substrate (1).

2. The method of claim 1, **characterized in that** the heating takes place selectively with a focusing heat source (11), in particular by means of laser.

3. The method of claim 1 or 2, **characterized in that** the hotmelt adhesive (5) is applied as granules.

4. The method of one of the preceding claims,
5 **characterized in that** the incipient melting takes place with a laser.

5. A method of one of the preceding claims, **characterized by** immersing a heated substrate (1) or microcomponent (18)
10 in pulverulent hotmelt adhesive to apply the adhesive (5) at the immersed areas.

6. The method of one of the preceding claims,
characterized by application of pulverulent hotmelt
15 adhesive through a contoured screen (13) to the substrate (1) or microcomponent (18).

7. The method of one of the preceding claims,
characterized by electrostatic charging of a surface and/or
20 a pulverulent hotmelt adhesive (5) to support the areal or patterned application of adhesive.

8. The method of one of the preceding claims,
characterized by immersion of a heated patterned surface of
25 the substrate (1) or microcomponent (18) in pulverulent hotmelt adhesive to apply the adhesive (5) at the raised sites on the patterned surface.

9. The method of one of the preceding claims,
30 **characterized by** electrostatic charging of a roll (12), areal application of the pulverulent hotmelt adhesive to the partly electrostatically charged surface of the roll (12) and transfer of the selected bondsites (7) from the roll (12) to the substrate (1) or microcomponent (18), and
35 brief heating of the surface to incipiently melt the adhesive (5).

10. The method of one of the preceding claims,
characterized by electrostatic charging of the selected bondsites, areal application of the pulverulent hotmelt adhesive to the partly electrostatically charged surface of
5 the substrate (1) or microcomponent (18), and brief heating of the surface to incipiently melt the adhesive (5) at the electrostatically charged bondsites (7).

10 11. The method of claim 1, **characterized by** placement of a transfer sheet (15) with granular or pulverulent adhesive (5) attaching thereto, or of a layer produced from hotmelt adhesive, to the adherend surface of the microcomponent (18) or substrate (1).

15 12. The method of claim 11, **characterized by** contouring of the transfer sheet (15) to select bondsites (7).

20 13. The method of claim 11, **characterized by** application of the adhesive (5) to selected bondsites (7), when the transfer sheet (15) lies on the surface of at least one microcomponent (18) or substrate (1), by mechanically stamping the transfer sheet (15) onto the substrate (1) or microcomponent (18) or locally heating the transfer sheet (15).

25 14. The method of one of the preceding claims,
characterized by preheating of at least the surfaces to which adhesive (5) is applied.

30 15. The method of one of the preceding claims,
characterized by afterheating of the microsystem component after the at least one microcomponent (18) has been adhered to the substrate (1).

35 16. The method of claim 14, **characterized in that** the afterheating takes place selectively by means of focusing heat source (11) or globally.

17. The method of one of the preceding claims,
characterized in that the granules of the adhesives (5)
have a diameter of less than 150 µm.

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18. The method of claim 17, **characterized in that** the
diameter of the granules is situated in the range from 0.5
to 150 µm.

10 19. A microsystem component having at least one
microcomponent (18) bonded to a substrate (1),
characterized in that the adhesive bonding is performed by
the method of one of claims 1 to 18.

15 20. The microsystem component of claim 19, **characterized**
in that the microcomponents (18) are smaller than 1000 µm.